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A HIGH PRIORITY FOR HUMAN NUTRITION RESEARCH - IT'S LONG OVERDUE

The benefits from human nutrition research are better health, a longer active lifespan, and greater satisfaction from work. Potential benefits may accrue from increased and more consistent individual performance from alleviating nutrition-related health problems, and increased efficiency and effectiveness in public and private food services. The application of nutrition knowledge during recent decades has played a major role in reducing the number of infant and maternal deaths, deaths from infectious diseases -- particularly among children -- and extending productive lifespan. A vast amount of health and economic benefits can flow from research yet to be done. The White House, Secretary Bergland, Assistant Secretary Carol Foreman and I are fully committed to greater emphasis on USDA's nutrition research activities.

The Current Effort

The Department of Agriculture and land-grant universities have carried out a modest research effort directed towards limited objectives of human nutrition for many years. Despite its restricted size, this research has provided most of the information currently available on nutrient requirements, the nutrient composition of foods and the proper components of daily diets.

There are, of course, other universities as well as three other Federal agencies that support and conduct important efforts in human nutrition research: The Department of Defense; Health, Education, and Welfare, and

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Remarks of Dr. M. Rupert Cutler, Assistant Secretary of Agriculture for Conservation, Research, and Education, before the Agricultural Research Policy Advisory Committee (ARPAC), July 22, 1977

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the Veterans Administration. HEW, the largest, expends approximately $80 million a year. Next, in order of program size, is USDA, DOD, and the Veterans Administration. HEW's research on human nutrition in the National Institutes of Health and the Bureau of Foods of the Food and Drug Administration concentrates on improving understanding, prevention, and treatment of diseases. It's concerned with nutrient requirements, dietary status of people, effects of nutrition on diets, metabolic defects, and food composition. HEW also has an active extramural program primarily directed to support of medical school programs.

DOD's research in human nutrition focuses on maintenance of health, feeding troops on or under the sea, in the air and on land. The research also includes food preservation and specialized rations.

The VA performs human nutrition research primarily in VA hospitals and to some extent in academic, medical, and other non-profit institutions. The primary mission is to improve patient care and to support the medical research of its professional staff.

Within the USDA, the Agricultural Research Service has the most extensive program conducted in three major areas: (a) human requirements for nutrients, (b) food composition and improvement, and (c) food consumption and use.

Studies on nutrient requirements include requirements for intake of lipids, proteins and amino acids, carbohydrates, vitamins and minerals. Food composition and improvement work includes the development of standard reference tables for the nutritive value of foods; research on the

nutritional enrichment of foods; and the composition of agricultural commodities. Food consumption and use studies measure food consumption and dietary levels, develop nutrition guidelines, evaluate means to modify food habits and develop procedures for food use in homes and institutions. The total effort this fiscal year is about $14 million.

Of funds administered by CSRS, $10-$12 million are used for human nutrition research. Of the research funds that States provide the institutions receiving CSRS support, approximately $12 million is used for human nutrition. This research encompasses investigations on nutrition requirements, surveys of dietary status, the relation of disease and diet, improved nutritive value and safety of foods, food composition and related consumer factors.

The Economic Research Service spends about $700,000 annually on nutrition-related research. Studies involve (a) factors influencing consumer choices and consumption, (b) domestic food programs, (c) international food and nutrition technical assistance and (d) food consumption, demand and prices.

USDA will spend approximately $24-$25 million on human nutrition research this fiscal year. The cooperating universities will probably spend about one-half that amount.

Priority Needs

Seven different reports in recent years -- by ARPAC, by Congressional committees and by the National Academy of Sciences -- strongly recommend more USDA research on human nutrition.

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The recommendations go far beyond expansion of funds. With considerable unanimity, the reports identify priority needs in human nutrition research and outline the urgent problems to be addressed. These priorities fall into five major areas: (1) the nutritional consequences of government policies, (2) nutrition intervention programs, (3) nutrition-performance relationships, (4) the role of dietary components, and (5) nutrition in developing countries. In some of these five areas, practically no studies exist. In all of these areas, we need to strengthen USDA and land-grant universities' research. To explain this conclusion, let's look at each of the five.

Nutritional consequences of government policies -- We need research on the nutritional consequences of specific -- as well as general -- government policies if a coherent nutrition policy is to be developed. Specific policies encompass food production, processing and distribution as well as the national goals for nutritional adequacy. General policies include taxation, income redistribution, and employment, among others.

Subjects we could look at include the nutritional effects of food production strategies, agricultural research priorities, agricultural extension, rural credit services, food self-sufficiency and food aid. We should evaluate the nutritional consequences of food and agricultural pricing policies, marketing technologies, delivery systems, international trade, and grain reserves. The nutritional implications of the general policies of tax, income, equal opportunity, environmental protection, and others should be appraised. This research should emphasize the consequences of policy on those with low incomes, the socially disadvantaged, children, and the aging.

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Currently, no studies ascertain the specific nutritional consequences of government policies. This is inferred only by indirect interpretation of general economic studies.

Nutrition Intervention Programs -- Specific intervention measures can alleviate or even solve some nutrition problems. These include the fortification of foods with specific nutrients, food rehabilitation centers, food distribution or supplementary feeding programs, and nutrition education. Some intervention programs have questionable cost-effectiveness and do not reach more than a small proportion of groups to be helped.

Priority research for this area should include developing and testing evaluation methodologies for food fortification, direct food distribution, nutrition education and other nutrition programs. The research should determine what, when, and how programs can be measured, and how the findings can be used for purposes of decision-making.

Research is needed to develop and evaluate information programs to combat food and nutrition misinformation, including food safety and programs on nutrition education. We must continue to conduct diet assessment surveys with emphasis on the status of vulnerable groups and develop better techniques for making the assessments. Our research should determine the factors affecting food choices, preferences, practices and habits, and the development of malnutrition.

The current research activity in this priority area is primarily on determining factors affecting food choices, and preferences with some studies to determine the acceptability of food through studies of flavor and texture as affected by processing.

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Expenditures on diet assessment surveys are modest with very limited efforts to evaluate alternative food intervention programs. Practically no effort is being made to develop and evaluate a mass media campaign for nutrition information. There is no known research on testing evaluation methodologies for food fortification.

Nutrition-Performance Relationships -- It is essential for us to determine the consequences of different levels of nutrition on work performance; physical and mental growth and development; school and job performance; pregnancy and lactation; and fertility and family planning. Knowledge of the effects and requirements for particular nutrients is fragmentary, even for high-income populations.

We need to know the difference in nutritional requirements for both sexes, for all age groups, for people under varying occupational and stress conditions, and particularly for high-risk groups. Criteria for establishing nutritional requirements should be developed. Requirements for types and quantities of carbohydrates, including fiber, should be determined.

Of the current agricultural research in this area that is conducted by agricultural scientists, nearly 90 percent is on identifying nutrient requirements. A large proportion of this is basic work on the biochemical aspects of nutrition. But not much effort is directed towards the differing of age, sex, occupation, and stress conditions. For example, the latest report indicates practically no work on nutritional requirements during different periods of growth, pregnancy, lactation, and middle-age.

There is virtually no effort currently directed at developing new criteria for nutrition-performance relationships other than the basic biochemistry that would serve to undergird such efforts. Only a minimum effort is underway on the human requirements for carbohydrates and fiber.

Role of Dietary Components -- The selection of food intervention programs and the rational choice of foods by individuals depend on our knowledge of the nutrient composition of foods. We lack data on the amounts of some important nutrients in foods and the availability of the nutrient forms which occur in various foods. Many data have become obsolete as a result of changes in agricultural practices, new varieties, new processing methods, storage and transportation.

The research needs include investigating the factors affecting the ability of people to utilize nutrients in specific foods including the chemical form of the nutrient, interrelationships to other nutrients, and presence of inhibitors. We also need to study the nutrient changes in foods that occur after harvest or slaughter and during processing and distribution. Our research should determine the social and economic feasibility and nutrient possibilities of new or improved foods and processes. And of top priority is the conversion of these findings from private and public laboratories into readily useful information for consumers, public agencies, and private businesses and organizations.

Studies on changes in nutrient content due to production, processing, and handling practices are few in number and inadequately funded. It is true that investigations by industry have increased with the regulations of food

labeling. However, because of the multitude of commodities, processes and practices, there is need to increase the effort, particularly to develop information that can be used in considering new processes and practices.

The current program on new foods and processes is the largest in all the areas of food and nutrition research (more than $8 million). Coupled with the input of industry, it covers a wide range of food sources, primarily from plants. However, only a very small component is concerned with the social and economic feasibility along with the nutrition of the product.

In regard to providing a data bank on nutrient composition of raw, processed and cooked foods, there is minimum funding to support the present system. However, additional effort is needed to acquire extensive data on composition of foods to meet the increasing demands of public and private organizations.

Nutrition in Developing Countries -- Much of the research shown above has international dimensions and the findings can be useful for developed and developing countries throughout the world. However, because of the critical problems of hunger and malnutrition facing developing countries, specific research should be undertaken to meet their circumstances and requirements.

There should be research on policies affecting nutrition that include comparative studies of different countries and reflect the particular types of policies needed. They should include analyses of differences in political

and cultural practices and also situations where populations appear to be relatively healthy and nutritionally satisfied despite relatively low per capita levels of food consumption and income.

Research is needed on evaluating alternative intervention programs in terms of the dietary needs of specific countries and the interaction of such programs with different political and cultural systems. Research is required on nutrition-performance relationships that gives strong consideration to the effect of low calorie intakes on physical activity and the effects of protein-calorie and other nutrient deficiencies on physical and mental growth of children. Research is needed on the influence of environment as it affects diets and requirements for specific nutrients in developing countries.

There is a little effort on demonstrating commercial viability of fortified foods in foreign countries and providing technical assistance to AID on special foods and delivery systems to target groups. Agricultural research has developed many of the processed foods that have been distributed to developing nations. However, there is no continuing research in this area to produce the knowledge base essential to understanding and solving the nutrition problems of developing countries.

The priority needs in these five major areas are not merely a "laundry list" of nice things that could be done. They are a set of obligations which we in agricultural research must meet either by redirection of effort or new fundings. We should vigorously pursue both possibilities in order to give the emphasis in our research that those human needs require.

Furthermore, the urgency of these priorities, the obvious multi-discipline and multi-institutional nature of much of the research, and the strong public concern about human nutrition, requires that we take extraordinary steps to insure focus, the best utilization of funds, and the most effective production of results. We should challenge the national and regional planning groups of ARPAC to utilize the most advanced research planning and management techniques available in ways that will strengthen the partnership between USDA and the State institutions. At the same time, we will need to coordinate our efforts with other Federal agencies and universities and institutions outside our system.

Both the Senate and the House of Representatives, in their farm bills, have called for increased emphasis on human nutrition research. Both Houses included competitive grant money for human nutrition. They have challenged all of us to move out and meet the priority needs. I say, let's get on with it and let's start right now.

Within the Department, we are currently considering the budget for FY 1979. I can tell you that in the discussions thus far human nutrition research is high on our list of priorities. I suggest that ARPAC organize itself to get ready to take the lead. In doing so, I come here with no specific proposal except that this group commit itself to doing the job.

Human nutrition research benefits everybody. If we meet the challenges given to us in this area, all the American people as well as people throughout the world will be the benefactors.

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